

Course Outline: Prompt Engineering on AWS

Course Duration: 2 Days

Target Audience: Business professionals, Cloud Engineers, Developers, Data Analysts, AI/ML Practitioners, Solution Architects, and Technical Decision-Makers.

Course Objective:

This course equips participants with practical prompt engineering skills using AWS Generative AI services. Participants will learn how to design, optimize, evaluate, and secure prompts using Amazon Bedrock and foundation models to solve real-world business and technical problems.

1. Course Outline

Day 1: Generative AI and Fundamentals of Prompt Engineering

Module 1: Introduction to Generative AI

- Introduction to Artificial Intelligence, Machine Learning, and Generative AI
- Understanding Large Language Models (LLMs)
- How foundation models work
- Tokens, context windows, and model parameters
- Overview of AWS Generative AI ecosystem
- Introduction to Amazon Bedrock and supported foundation models

Module 2: Fundamentals of Prompt Engineering

- What is Prompt Engineering?
- Importance of effective prompting
- Anatomy of a prompt
- System prompts, user prompts, and contextual instructions
- Zero-shot, one-shot, and few-shot prompting
- Role-based and persona-based prompting
- Instruction-based prompting
- Contextual prompting
- Prompt templates and reusable prompts

Module 3: Advanced Prompt Engineering Techniques

- Chain-of-thought prompting and reasoning-oriented techniques
- Step-by-step prompting
- Structured output prompting
- Delimiter-based prompting
- Prompt decomposition and task breakdown
- ReAct prompting concepts
- Retrieval-Augmented Generation (RAG) fundamentals
- Managing hallucinations through prompt design
- Prompt optimization techniques

Hands-on Lab 1:

- Accessing foundation models through Amazon Bedrock
- Designing prompts for business and technical scenarios
- Comparing zero-shot, one-shot, and few-shot prompting
- Experimenting with different models and prompt configurations

Day 2: Role-Based Prompt Engineering Using AWS

Module 4: Prompt Engineering for Business Roles

Role	Practical Use Cases
HR Professionals	Job descriptions, resume screening assistance, interview questions, employee communication
Finance Professionals	Financial report summaries, invoice analysis, budget explanations, variance analysis
Marketing Professionals	Campaign generation, customer personas, content creation, market research summaries
Procurement & Audit	Vendor evaluation criteria, procurement document analysis, audit checklist generation
Customer Support	Customer response generation, ticket classification, FAQ generation, sentiment analysis
Project Managers	Project plans, risk identification, meeting summaries, status reports

Module 5: Prompt Engineering for Technical Roles

Role	Practical Use Cases
Cloud Engineers	AWS architecture explanations, troubleshooting assistance, CloudFormation template generation
Developers	Code generation, code explanation, debugging, unit test generation
Data Analysts	SQL generation, data interpretation, report summaries, data transformation
Security Professionals	Security log analysis, incident summaries, security policy drafting
Solution Architects	Architecture recommendations, design documentation, trade-off analysis
DevOps Engineers	CI/CD pipeline explanations, deployment troubleshooting, automation scripts

Module 6: Prompt Engineering with Amazon Bedrock

- Working with Amazon Bedrock Playground/PartyRock
- Selecting foundation models for different use cases
- Using system prompts and inference parameters
- Temperature, Top-P, and maximum token configuration
- Prompt management and reusable prompt templates
- Introduction to Amazon Bedrock Guardrails
- Responsible AI and prompt security
- Identifying and mitigating prompt injection
- Evaluating prompt quality and model responses

Hands-on Lab 2:

- Build a business assistant using Amazon Bedrock
- Create role-specific prompts for HR, Finance, and Marketing
- Generate structured business reports
- Apply Guardrails to control model responses

Module 7: Prompt Engineering Capstone Project

Participants will work on a practical business use case.

Project: Build a Role-Based AI Assistant using Amazon Bedrock.

Activities:

- Identify a business problem and target user role.
- Select an appropriate foundation model.
- Design system and user prompts.
- Implement prompt templates for multiple tasks.
- Test and optimize prompts.
- Apply Guardrails for responsible AI usage.
- Evaluate the accuracy and relevance of generated responses.
- Demonstrate the solution and present findings.